



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/720,649	11/24/2003	Kevin J. Lee	42P16018	4663

7590 11/02/2005
Jan Carol Little-Washington
BLAKELY, SOKOLOFF, TAYLOR & ZAFMAN LLP
Seventh Floor
12400 Wilshire Boulevard
Los Angeles, CA 90025-1026

EXAMINER

RAO, SHRINIVAS H

ART UNIT PAPER NUMBER

2814

DATE MAILED: 11/02/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/720,649

Applicant(s)

LEE, KEVIN J.

Examiner

Steven H. Rao

Art Unit

2814

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 18 August 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-31 is/are pending in the application.
- 4a) Of the above claim(s) 5-29 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☐ Claim(s) 1-4, 30 and 31 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Priority

Acknowledgement is made of papers filed claiming priority from U.S. Serial No. 10/ 720,349 November 24, 2003 under 37 CFR 1.114.

Therefore claims 1-4 as recited in the amendment are currently pending in the Application.

Claims 5-29 are withdrawn as being drawn to a non-elected group .

Claim Rejections - 35 USC # 1 03

The following is p quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action.

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior ad are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains.

Patentability shall not be negated by the manner in which the invention was made.

Claims 1-4 and 30-31 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kelly et al. (U.S. Patent No. 6,396,116, herein after Kelly) in view of Distefano et al. (U.S. Patent No. 5,558,ù28, herein after Distefano) .

With respect to claim 1 Kelly describes an apparatus, comprising a first wafer

Art Unit: 2814

having layer of bulk silicon, a first layer of active silicon disposed on the first layer of bulk silicon, a first layer of interconnects disposed on the first layer active of active silicon and a first metal pattern disposed on a top surface of the first layer of interconnects ; (Kelly fig. 2 , col. 4 lines 44 to 55) a second wafer having a second layer of active silicon disposed on the second layer of bulk silicon, a second layer of interconnects disposed on the second layer active of active silicon a second metal pattern disposed on a top surface; (Kelly fig. 2 , col.3 lines 7-17, col. 5 lines 5-15, col.5 lines 60-65-second metal) .

Kelly does not specifically mention an interposer disposed between the top surface of the first wafer and the top surface of the second layer of interconnects , wherein the first wafer is turned upside down , the interposer having a pattern of metal vias disposed (in thermoplastic) that are cured.

However Distefano, a patent from the same filed of endeavor, describes in col.5 lines 10-20 col. 1 lines 65-67 and col.2 lines 1 to 9 an interposer disposed between the top surface of the first wafer and the top surface of the second layer of interconnects , wherein the first wafer is turned upside down , the interposer having a pattern of metal vias disposed (in thermoplastic) that are cured to form an unitary mass and cause the flowable dielectric material to flow and conform to the major surface of the circuit panels the pattern of metal vias being aligned with and electrically coupled to the first metal pattern and the second metal pattern and to cross link the material of the thermosetting plastic .

Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to include Distefano's an interposer disposed between the top surface of the first wafer and the top surface of the second layer of interconnects , wherein the first wafer is turned upside down , the interposer having a pattern of metal vias disposed (in thermoplastic) that are cured in Kelly's device . The motivation to undertake the above combination is to form an unitary mass and cause the flowable dielectric material to flow and conform to the major surface of the circuit panels the pattern of metal vias being aligned with and electrically coupled to the first metal pattern and the second metal pattern .(Distefano col. 2 lines 4-5 and col. Col. 4 line 65 t6 col. 5 line 9) and to cross link the material of the thermosetting plastic wherein the first wafer is bonded to the second wafer face to face using the interposer. (inherent in flip chip bonding).

With respect to claim 2 Kelly describes the apparatus of claim 1, wherein the interposer further comprises of the dielectric film disposed in the cured thermosetting plastic. (Distefano col. 5 lines 8-10).

With respect to claim 3 Kelly describes the apparatus of claim 1 , wherein the cured thermosetting plastic comprises a polyimide material. (Kelly col.5 lines 35-40, Destafano col. 8 lines 49-51).

With respect to claim 4 Kelly describes the apparatus of claim 3, wherein the cured thermosetting plastic comprises an epoxy material.(Distefano col. 8 lines 49-51).

With respect to claims 30 and 31 , Kelly describes wherein the first wafer includes a first device disposed in at least a portion of the first metal pattern and the

Art Unit: 2814

second wafer includes a second device disposed in at least a portion of the second metal pattern. (Kelly figures 4b to 10 B, etc.).

Response to Arguments

Applicant's arguments filed on 08/18/2005 have been fully considered but are moot in view of the new rejection.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Steven H. Rao whose telephone number is (571)272-1718. The examiner can normally be reached on 8.00 to 5.00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Fahmy Wael can be reached on (571) 272-1714. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


Steven H. Rao

Patent Examiner

October 28, 2005.


LONG PHAM
PATENT EXAMINER